REJECTION UNDER 35 U.S.C. §103:

In the Office Action at pages 2-4, the Examiner rejected claims 1, 7, 9, 11-14, 19-20, 25, 33, 35, 37-38, 45, 47 and 55 under 35 U.S.C. §103 in view of either Maeda et al. (U.S. Patent No. 6,069,870) or Horikiri (U.S. Patent No. 5,537,373) as set forth in the previous Office Action dated October 26, 2001. The rejection is traversed based on the following and reconsideration is requested.

As an initial matter, it is the Applicant's earnest intention to clearly point out the structural difference between the claimed invention and Maeda et al. or Horikiri herein below. However, an interview with the Examiner is respectfully requested as the structural difference is often better explained in person than the written words alone.

Structural Difference: FIG. 5 vs. Maeda et al. or Horikiri

The structure of the recording medium of FIG. 5 of Applicant's application is recited in claims 1, 7, 13-14, 19-20, 35, 37-38, 45 and 47. FIG. 5 shows grooves and lands having sinusoidal wobbles. Starting from the top left to bottom left of FIG. 5, and singling out a wave from each wobbled waves, the first sinusoidal wave is convex (∩), the second sinusoidal wave below the first wave is concave (∪), the third wave below is concave (∪), the fourth wave below is convex (∩), the fifth wave below is convex (∩) and the sixth wave below is concave (∪).

Accordingly, the first wave is out-of-phase with the second wave by a predetermined phase (i.e., by π), the second wave is in-phase with the third wave, the third wave is out-of-phase with the fourth wave by the predetermined phase, the fourth wave is in-phase with the fifth wave, and the fifth wave is out-of-phase with the sixth wave by the predetermined phase. Thus, an out-of-phase and in-phase structure or arrangement of the wobbled groove and land tracks is clearly demonstrated in FIG. 5 of Applicant's application.

Therefore, considering the first, third and fifth waves as wobble(s) of the "first type of tracks," and the second, fourth and sixth waves as wobble(s) of the "other type of tracks," with reference to the above and FIG. 5, "...first type of tracks...*are out of phase with the wobbles of the next* other type of track *by a predetermined phase difference and the wobbles of* the other type of tracks *are in phase with the wobbles of the next* first type of tracks," as recited in claim 1, and similarly claimed in 13-14, 19-20, 35, 37-38, 45, and 47.

In contrast, Maeda et al.'s wobbled groove and land tracks have an out-of-phase by $\pi/2$ and out-of-phase by $\pi/2$ arrangement. Applicant respectfully draws the Examiner's attention to Figures 3 and 27 of Maeda et al., and specifically to Figure 3 and waves captured between the first solid horizontal line (from the left of the figure) and the next dotted horizontal line (parallel and to the right of the first solid horizontal line). Here, using the similar dissecting method from the above, from top to bottom, the first sinusoidal wave, while concave ($\cup$), is out-of phase by $\pi/2$ to the second wave below, the second wave is out-of phase by $\pi/2$ to the third wave, and the third wave, while convex ($\cap$), is out-of-phase by $\pi/2$ to the fourth wave. Accordingly, Maeda et al. discloses a recording medium having an out-of-phase and out-of-phase structure and not an out-of-phase by a predetermined phase difference and in-phase structure of the present invention.

On the other hand, Horikiri merely discloses a recording medium having waveforms/wobbles on both sides of groove tracks, which are in-phase with respect to each other, but are arranged on the recording medium such that resulting waveforms/wobbles with respect to land tracks are random and not used in a meaningful manner. Horikiri expressly states, referring to the wobbles with respect to the land tracks, "it is not possible to obtain a wobble signal from the push-pull signal because the waveforms on both sides of the land are different." See col. 3, lines 7-13. Therefore, instead of having an out-of-phase by a predetermined phase difference and in-phase structure of the present invention, Figure 1A of Horikiri discloses a random out-of-phase and in-phase structure.

For example, referring to Figure 1A of Horikiri, again singling out a wave from each wobbled waves for an illustrative purpose, and starting from the top left to top right of the figure, the first sinusoidal wave ($\supset$) is in-phase with the next second wave ($\supset$); wobbles with respect to a groove-groove are in-phase. However, the second wave is out-of phase with the third wave by a random phase difference. Continuing on, the third wave ($\subset$) is in-phase with the fourth wave ($\subset$); wobbles with respect to a second groove-groove are in-phase. But again, the fourth wave is out-of-phase with the fifth wave by another random difference, this time clearly demonstrating that there is no predetermined out-of-phase structure as the first out-of-phase difference is clearly different from the second out-of-phase difference.

In other words, in the Applicant's invention, an out-of-phase by a predetermined phase difference and in-phase structure is provided so as to make meaningful use of both the wobbles with respect to the groove-groove (i.e., the first wave to the second wave) structure, and with

respect to the land-land (i.e., the second wave to the third wave) structure. In Horikiri, only wobbles with respect to the groove-groove are in-phase and used. In Horikiri, wobbles with respect to the land-land are random/arbitrary out-of-phase, and are not used or predetermined for a useful purpose.

Structural Difference: FIG. 3 vs. Maeda et al. or Horikiri

The structure of the recording medium of FIG. 3 of Applicant's application is recited in claims 9, 11-14, 19-20, 35, 37-38, 45 and 47. Starting from the top left to bottom left of FIG. 3, and singling out a wave from each wobbled waves, the first sinusoidal wave is convex ($\cap$) and out-of-phase by π to the second wave below the first wave, the second wave is concave ($\cup$) and out-of-phase by π to the third wave, and the third wave is convex ($\cap$) and out-of-phase by π to the fourth wave which is concave ($\cup$).

Accordingly, FIG. 3 of Applicant's application discloses a recording medium having wobbled groove and land tracks where "the wobbles of the groove tracks and the land tracks *are out of phase with the wobbles of the next* other types of tracks, and...have a phase difference of π..." as recited in claims 9 and 11-12, and similarly claimed in 13-14, 19-20, 35, 37-38, 45 and 47.

In contrast, Maeda et al.'s wobbled grove and land tracks are out-of-phase by $\pi/2$, out-of-phase by $\pi/2$, and out-of phase by $\pi/2$, etc., and not out-of-phase by π, out-of-phase by π, and out-of phase by π, etc., as in FIG. 3 of Applicant's application. In column 7-line 33 to column 8-line 29 and column 9-line 21 to column 10-line 55, Maeda et al. discloses the importance of the $\pi/2$ relationship. Specifically, this orthogonal relationship between wobbles of groove/land tracks to wobbles of land/groove tracks is used with reference signals generated for the wobbled groove and land tracks in a detailed multiplication and integration process to detect address information represented by the wobbling waveforms.

In other words, Maeda et al. specifically dictates a recording medium structure with wobbled groove tracks that are out-of-phase with wobbled land tracks by $\pi/2$. On the other hand, Applicant's claims 9 and 11-12, and in part 13-14, 19-20, 35, 37-38, 45 and 47 specifically recite wobbled groove tracks that are out-of-phase with wobbled land tracks by π.

With respect to Horikiri, from the above, an out-of-phase by π and out-of-phase by π structure of the recording medium of FIG. 3 of Applicant's application can be clearly

distinguished from an in-phase and random out-of-phase structure of Horikiri.

For at least the reasons stated above, Applicant respectfully submits that the structure of the recording media as recited and shown in FIGS. 3 and 5 of Applicant's application are new and distinguishable from the structure of the recording medium shown in Maeda et al. or Horikiri. Furthermore, advantages of the recording mediums having the corresponding structures recited and disclosed in FIGS. 3 and 5 (i.e., having an out-of-phase structure by π instead of $\pi/2$, using the resulting wobble signals with respect to both groove-groove and land-land tracks, etc.) are detailed in the Applicant's Response filed on January 26, 2002, in response to the Office Action dated October 26, 2001. The applicable portions are incorporated herein by reference to avoid repetition.

Finally, for at least the reasons stated above, and in Applicant's Response filed on January 26, 2002, Maeda et al. or Horikiri does not disclose or suggest an optical disk recording and/or reproducing apparatus, a servo controller, and a servo controlling method for a recording medium having the structures recited and shown in FIGS. 3 and 5 of Applicant's application.

With Respect to Physical Identifier Header Structure

Applicant respectfully notes that claims 11, 25, 33, and 55 are drawn to physical identifier headers positioned at centers of groove and land tracks (see FIGS. 3 and 5 of Applicant's application), and such structure is not disclosed or suggested by the Applicant's own disclosure and Fig. 7A of Maeda et al. Instead, Applicant's own prior art (see FIG. 1 of Applicant's application) and Fig. 7A of Maeda et al. disclose headers positioned at a boundary line between the land and groove tracks. Advantages of having the physical identifier headers positioned at the centers of the groove and land tracks with respect to the recording medium structures of the present invention are disclosed in Applicant's Response filed on January 26, 2002, and relevant portions are incorporated herein by reference to avoid repetition.

At this time, Applicant respectfully requests that the Examiner consider the patentability of the Applicant's dependent claims based on their dependence thereof and for their limitations recited therein.

With Respect to Asano et al. (WO 98/13823)

Applicant respectfully notes that Asano et al. is directed to a recording medium having a different wobbled groove tracks structure than the structures recited and shown in FIGS. 3 and 5 of Applicant's application. Specifically, Asano et al., like Horikiri, appears to be drawn only to a wobbled structure with respect to a groove-groove track (wobbles of one edge of the groove to wobbles of the other edge of the groove). In other words, Asano et al. does not appear to disclose or suggest utilizing an in-phase or out-of-phase aspect of the wobbles and the resulting wobble signals with respect to a land-land track having the structures as recited and shown in FIGS. 3 and 5 of Applicant's application.

Asano et al. discloses a recording medium having "a plurality of first grooves whose sidewalls (at least...one) are wobbled in accordance with address information...which are represented by the changing widths of lands provided between second grooves...and third grooves whose sidewalls...are symmetrical and wobbled..." See abstract of Asano et al. In other words, Asano et al. discloses a recording medium having first type of groove tracks having a wobbled structure based on the width of land tracks disposed between second and third type of groove tracks, wherein wobbles with respect the third type of groove tracks are symmetrical, in-phase.

That is, in Asano et al., wobbles of one edge of the first groove with respect to wobbles of the other edge of the first groove (groove-groove) are set according to the changing width of a corresponding land track. On the other hand, the wobbles with respect to each of the third groove tracks (groove-groove) are symmetrical, and in-phase with each other. Thus, Asano et al. discloses at least two different types of groove-groove track structures within a recording medium; one based on varying widths of a corresponding land track, and the other always in-phase with each other. However, Asano et al. fails to disclose or suggest utilizing an in-phase or out-of-phase structure of the wobbles and the resulting wobble signals with respect to a land-land track, as described below.

Specifically, Asano et al. does not disclose or suggest a recording medium having the structure as recited and shown in FIG. 3 of the Applicant's application. With reference to the above and FIG. 3 (again singling out a wave from each wobbled wave, from top to bottom), Asano et al. does not disclose a recording medium having wobbles with respect to a groove-groove track (first wave to second wave) that are out-of-phase by π, a land-land track (second

wave to third wave) that are out-of-phase by π, and the next groove-groove track (third wave to fourth wave) that are out-of-phase by π.

Furthermore, Asano et al. does not disclose or suggest a recording medium having the structure as recited and shown in FIG. 5 of the Applicant's application. With reference to the above and FIG. 5 (again singling out a wave from each wobbled waves, from top to bottom), Asano et al. does not disclose a recording medium having wobbles with respect to a groove-groove track (first wave to second wave) that are out-of-phase by a predetermined phase difference (i.e., π), a land-land track (second wave to third wave) that are in-phase, the next groove-groove track (third wave to fourth wave) that are out-of-phase by the predetermined phase difference, and the next land-land track (fourth wave to fifth wave) that are in-phase, etc.,

Briefly, Applicant notes that singling out a wave from each wobbled wave from the figure shown in abstract of Asano et al., similarly to the above, appears to reveal a different structure as compared to FIGS. 3 and 5 of Applicant's application. In addition, Applicant further notes that by having land tracks with different widths, i.e., one land track having a wider width than another land track, Asano et al. appears to teach away from the Applicant's invention and objective of providing a large capacity recording medium such as an HD-DVD.

With Respect to New Prior Art Van Den Enden et al.

In accordance with MPEP § 706.07(a) and (d), Applicant respectfully submits that the Final Rejection based on Van Den Enden et al. (US 6,181,658) is improper, and requests the Examiner to withdraw this rejection as it appears that this new ground for rejection is not necessitated by Applicant's amendment of the claims, based on information submitted in the IDS, or cited as pertinent art in the prior Office Action dated October 26, 2001.

In particular, Applicant respectfully submits that the prior amendment of the claims appears to have been made to improve their form and more clearly describe the structures of the Applicant's invention, and not to overcome Maeda et al. or Horikiri. In addition, Applicant respectfully notes that Van Den Enden et al. is not cited as pertinent art in the prior Office Action; see page 3 of the Office Action dated October 26, 2001. Accordingly, removal of the finality of the rejection based on Van Den Enden et al. is earnestly requested.

Alternatively, and to avoid the repetition, for at least the reasons stated above, Applicant respectfully submits that the structure of the recording media as recited and shown in Applicant's application are distinguishable from that of Van Den Enden et al.

CONCLUSION:

In accordance with foregoing, it is respectfully submitted that all outstanding rejection have been overcome and that all pending claims patentably distinguish over the prior art.

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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